FURTHER RECORDS OF INSECTS COLLECTED FROM *Saccharum officinarum* IN THE TERRITORY OF PAPUA AND NEW GUINEA, WITH NOTES ON THEIR POTENTIAL AS PEST SPECIES

T. V. Bourke

*Department of Agriculture, Stock and Fisheries, Popondetta, Territory of Papua*

**SUMMARY**

As the growing of sugarcane as a commercial crop in the Territory of Papua and New Guinea is being seriously considered for the near future, periodic insect surveys were undertaken on experimental sugarcane plantings in the Markham Valley and in an experimental block at the Agricultural Training Institute, Popondetta. Records were also obtained from other Territory localities.

The noctuid *Sesamia grisescens* Walk. was the most important insect pest found, and in certain Markham Valley localities damage was particularly severe. Cerambycid larvae were responsible for damage to both young and maturing cane in the Markham Valley and at Popondetta, and occurred in such numbers as to suggest that they could be a pest of some importance. The adults of three species of the sub-family Lamiinae were collected from cane; they have not yet been bred through, but it would appear that *Auletes borbonica* Thoms., and *Popica* sp. could be the species involved.

An outbreak of the migratory locust, *Locusta migratoria*, completely stripped every plant of *S. officinarum* on Goodenough Island. Spur-throated locusts (*Austroacris* spp.) were also responsible for severe damage to young plantings and ratoon crops at Munum in the Markham Valley. Young plantings and ratoon crops in the Markham Valley were also severely damaged by an unidentified elachistid leaf-miner.

One other insect which may prove to be of economic importance is the delphacid *Eume-topina* sp. This species occurred in numbers on cane in the Markham Valley. Both the curculionid *Rhabdoscelus obscurus* (Boisd.), and the coccid *Saccharococcus sacchari* CKill., were of minor importance.

**INTRODUCTION**

Since Szent-Ivany and Ardley's paper was presented to the 11th Congress of the International Society of Sugar Cane Technologists in 1962, there has been an increase in interest in the possibility of growing sugarcane as a commercial crop in the Territory of Papua and New Guinea. Official sources have stated that a sugarcane industry will be established in the Territory as soon as the internal demand reaches a level that will support the establishment of an economic sugarcane mill.

As a part of the Territory's sugarcane program, experimental plots have been established for agronomic and yield potential purposes at Bubia, Narakapor, "Munum" plantation, Pyramid Hill, and near Kariaip in the Markham Valley, Morobe District*. A one-acre experimental plot was planted at the Agricultural Training Institute, Popondetta, Northern District in December 1966, to be used both for insect

* The Markham Valley stretches from Lae on the sea-board to Gusap, some 100 miles inland and north west from Lae. Bubia, Narakapor, "Munum" plantation, Pyramid Hill and Kariaip are approximately 9, 15, 20, 37 and 70 road miles from Lae.
survey purposes and for sugarcane insect life history studies. It will also be used for insect control trials.

The Markham Valley experimental plots have been regularly surveyed for insects every six to eight weeks since June 1966.

Szent-Ivany and Ardley\textsuperscript{11} reported that the three most important pests of *Saccharum officinarum* in the Territory were the noctuid *Sesamia grisescens* Walk., the curculionid *Rhabdoscelus obscurus* (Boisd.), and the coccid *Saccharicoccus sacchari* Ckl.

This paper records the results of the Markham Valley sugarcane surveys and collecting carried out on cane at Popondetta and elsewhere.

**ORTHOPTERA**

**Family Acrididae**

*Atractomorpha crenaticeps* Blanch. Adults were collected from sugarcane at Popondetta, Northern District. Foliage damage was of minor importance. *A. crenaticeps* has previously been recorded as a pest of sugarcane in both Queensland and Java\textsuperscript{1}.

*Austracris* spp. Adults and nymphs were collected from *S. officinarum* in the Markham Valley and at Popondetta. In the Markham Valley, foliage damage to young plantings and ratoon crops was severe at Munum, but light to moderate elsewhere. Only light damage has occurred to young cane at Popondetta.

Box\textsuperscript{1} lists three species of *Austracris*, viz. *basalis* Walk. (= *plagiat* Walk.), *guttulosa* Walk. and *proxima* Walk. as damaging sugarcane in Queensland and Fiji. There have been further recent reports of damage from Queensland\textsuperscript{6,14}.

*Gesonula mundata sanguinolenta* Kr. Adults collected from young cane at Popondetta, feeding on foliage (new record). Of little importance. *Heteropternis obscurella* (Blanch.). Adults were collected from young plantings at Munum, Markham Valley. Feeding on foliage (new record). Of little importance. One other species of *Heteropternis*, *H. respondens* Walch. (= *Oedipoda rufoe* Shi.), has been recorded from Formosa as a pest of sugarcane\textsuperscript{1}.

*Locusta migratoria* (L.). Adults (phase gregaria) completely stripped every plant of *Saccharum officinarum* growing in village gardens on Goodenough Island, Milne Bay District, during October and November, 1966. This is the first record of *L. migratoria* from the Territory, and the extent of the outbreak can be gauged by the fact that approximately 4800 acres of flying swarms was aerially sprayed with Malathion Low Volume Concentrate and approximately 130 acres of hopper bands ground sprayed with gamma-BHC before it was brought under control.

Unfortunately the distribution of *L. migratoria* within the Territory is not known so that the chances of this species becoming a pest of commercial sugarcane crops cannot be gauged.

*L. migratoria* has been recorded as a sugarcane pest elsewhere in the South Pacific\textsuperscript{7}, in the Philippines\textsuperscript{3}, and also in Queensland\textsuperscript{4}. Box\textsuperscript{1} also lists this species as a sugarcane pest from India, north-eastern China, Formosa, Madagascar and parts of southern Africa.

*Oxya gavis* (Walk.). Adults collected from young cane at Popondetta (new Territory record). Feeding on foliage. Of little importance. Previously recorded from sugarcane in the British Solomon Islands Protectorate\textsuperscript{6}.
**ENTOMOLOGY**

_Oxya vittigera_ (Blanch.). Adults collected from cane at Narakapor, Markham Valley (new record). Feeding on foliage. Of little importance.

_Stertocatantops angustifrons_ (Walk.). Adults collected from young cane at Kaiapit, Markham Valley (new record). Feeding on foliage. Of little importance.

_Valanga irregularis_ (Walk.). Adults and nymphs collected from young cane at Kaiapit, Markham Valley (new record). Foliage damage moderate.

**Family Tettigoniidae**

_Euconocephaulus coniceps_ (Redten.). Adults collected from young cane at Kaiapit, Markham Valley, usually sheltering in the leaf roll (new record). The status of this species as a sugarcane pest is not known.

Box lists two species of _Euconocephaulus_ from sugarcane—_E. nasutus_ Thumb, from the Philippines, and _E. varius_ Walk. from Formosa.

_Phanocephera gracilis_ (Burm.). Adults collected from young cane at Munum, Markham Valley (new record). Its status as a sugarcane pest is not known, but _P. furcifera_ Stal. has been recorded as a pest of sugarcane in the Philippines.

**Family Blattidae**

_Blattella_ sp. Adults commonly found sheltering in leaf rolls of cane at Munum and Kapiapit, Markham Valley, and at Popondetta, Northern District (new record). This species would appear to be of no economic importance.

**DERMAPTERA**

**Family Chelisochidae**

_Chelisoches morio_ (Fabr.). Adults very common at both Kaiapit, Markham Valley, and Popondetta, usually sheltering in the leaf roll. _C. morio_ has been recorded as a predator of coconut hispid. _Brontispa longissima_, and of the sugarcane leaf-hopper, _Perkinsiella saccharicida_ Kirk. It may well prove to be a predator of the delphacid _Eumetopina_ sp.

**HEMIPTERA**

**Suborder, Homoptera**

**Family Aleyrodidae**

_Neomaskellia bergii_ Sign. This species was recorded by Szent-Ivany and Ardley from Port Moresby. It has since been recorded on _S. officinarum_ from Isiveni, Northern District, and Wau. Buzacott also lists this species from Sogeri and Lae, and from _S. robustum_ on a tributary of the Markham Valley.

**Family Coccidae**

_Saccharicoccus sacchari_ Ckll. This scale, which is widely distributed in the coastal areas of the Territory, was found on only two occasions during the Markham Valley surveys—one at Pyramid Hill and once at Kaiapit. The infestations were only light and in both instances had completely disappeared at the next inspection.

**Family Delphacidae**

_Eumetopina flavipes_ Muir. Adults collected on _S. officinarum_ at Keravat, New
Britain, by van Velsen\textsuperscript{9} (new Territory record). This species has been recorded on sugarcane from the Philippines and New Caledonia\textsuperscript{1}.

\textit{Eumetopina} sp. Adults and nymphs were very numerous in the leaf rolls of cane at Bubia, Narakapor, Munum, and Kaiapit in the Markham Valley (new Territory record). It has also been collected from \textit{S. officinarum} at Popondetta.

The occurrence of this species in such numbers on cane of all ages is of interest in that it could develop into a major pest. Besides the obvious damage caused by feeding, it may also serve as a virus vector.

Family \textbf{Derbidae}

\textit{Proutista} sp. Adults were found by Catley\textsuperscript{10} feeding on sugarcane leaves at Isiveni, Northern District (new Territory record).

Box\textsuperscript{1} lists three species of \textit{Proutista} from sugarcane—\textit{P. \textit{fritillaris}} Boh. from Sierra Leone, \textit{P. \textit{lumholtzi}} Kirk. (= \textit{maculosa} Krug.) from Queensland, and \textit{P. \textit{moesta}} Westw. from India, Ceylon, South-east Asia and Pacific Islands.

Family \textbf{Eophopidae}

\textit{Gen. et sp. indet.} This species was collected from cane at Narakapor and Munum, Markham Valley, feeding on leaves in moderate numbers. They were usually found on the mid-veins. \textit{Serida} sp. (undescribed) has previously been collected from \textit{S. robustum} in the Markham Valley\textsuperscript{2}.

Family \textbf{Ricanidae}

\textit{Euricania splendida} F. This species is usually associated with cacao\textsuperscript{6}, but specimens were also collected on \textit{S. robustum} at Keravat, New Britain in 1954\textsuperscript{46}.

\section*{Suborder \textit{Heteroptera}}

Family \textbf{Colobathristidae}

\textit{Phaenacantha} spp. Adults numerous on cane at Munum and Kaiapit, Markham Valley, and at Popondetta, Northern District. Two species were involved, both feeding on foliage with one species also occurring in leaf rolls. Two, or possibly three species of \textit{Phaenacantha} have previously been recorded from \textit{Saccharum} spp. in the Territory\textsuperscript{8,11}.

Family \textbf{Lygaeidae}

\textit{Pachybrachius nervosus} Horv. Adults very numerous on cane at Kaiapit, Markham Valley, being found on young leaves and stems and often in the leaf rolls (new record).

Family \textbf{Coreidae}

\textit{Leptocorisa discoidalis} Walk. Adults collected on \textit{S. officinarum} by Dun at Keravat, New Britain, in 1963\textsuperscript{10} (new record). Box\textsuperscript{1} lists two species of \textit{Leptocorisa} from sugarcane—\textit{L. acuta} Thumb. from the Philippines, and \textit{L. varicornis} F. from India, China, Japan, and Formosa.

\textit{Riptortus} sp. nr. \textit{distinguendus} Blote. Adults collected from cane at both Munum
and Kainapit, Markham Valley, where they were feeding on young stems and foliage (new record). They appear to be of minor importance only.

Box 1 lists two species of *Riptortus* from sugarcane—*R. fuscus* F. from Formosa and the Philippines, and *R. linearis* F. from Formosa.

**Family Pentatomidae**

*Menida* sp. Adults common at Kainapit, Markham Valley, feeding on foliage (new Territory record). *M. histrio* is recorded from both China and Formosa as a pest of sugarcane.

*Plautia* sp. Adults common on cane at Kainapit, Markham Valley, feeding on foliage (new record).

**Family Miridae**

*Eurystylus apicifer* Walk. Adults collected from cane leaves at Narakapor (new record). Its status as a sugarcane pest is not known.

**DIPTERA**

**Family Chloropidae**

*Scoliothralvnus* sp. Adults were bred from cane collected at Kainapit, Markham Valley, in August 1966. The larvae were boring in stems (new record).

One other chloropid, *Hippelates flavipes* Lw., has been recorded from sugarcane in the Dominican Republic.

**Family Lonchaeidae**

*Sibis* sp. Adults bred from cane collected at Kainapit, Markham Valley, in August 1966. The larvae were boring in stems, but were not plentiful (new record).

**Family Platystomatidae**

*Elassogaster sepsoides* Walk.

*Elassogaster* sp.? *lineata* de Meij.

Adults of both species were collected from cane at Munum in the Markham Valley. Platystomatid larvae had previously been dissected from dying and rotting cane shoots, but whether the larvae are truly phytophagous or saprophagous remains to be proved. They were not bred out and it is not known whether they are immature stages of the two identified platystomatid species listed above.

Box 1 lists three species of *Euxesta* (Ortalidae-Platystomatidae) from sugarcane.

**COLEOPTERA**

**Family Anthribidae**

*Aracerus* sp.? *levipennis* Jord. Adults collected from sugarcane leaves, Popondetta, Northern District (new record). Its status as a sugarcane pest has not been proved, but Box 1 lists one species of *Aracerus* as occurring on sugarcane in Brazil (*A. fasciculatus* Deg.).

*Aracocoryns* sp. nr. *cumingi* Jekel. Adults collected from sugarcane leaves, Munum, Markham Valley (new record). Its status as a sugarcane pest has also not been proved.
Family **Coccinellidae**

Two species of Coccinellidae were collected from sugarcane at Kaiapit, Markham Valley—*Coccinella arcuata* F. and *Micraspis striata* (F.) (= *Verania lineata* Auctt.). The relationship between these two species and sugarcane is not known.

Family **Galerucidae**

*Aulacophora* sp. This is a very common species on sugarcane at Popondetta, Northern District (new record). It is of little economic importance with only minor leaf damage occurring. Box1 lists *Aulacophora* sp. from Java (?) on sugarcane.

*Monolepta* sp.? *nigroapicata* Bry. Adults collected from young cane at Popondetta, Northern District (new record). Of minor economic importance.

Box1 lists two species of *Monolepta* as pests of sugarcane—*M. nigrolineata* Motsch. from China, Korea, Japan, and Formosa, and *M. signata* Oliv. from India.

Family **Eumolpidae**

*Rhyparida coriacea* Jac. Adults were collected from cane, Popondetta, Northern District (new record). Damage to foliage was slight.

Buzacott* had previously collected *Rhyparida morosa* Jac. from cane in the vicinity of Lae, Morobe District.

Family **Nitidulidae**

Two species of *Carpophilus*—*C. mutilatus* Ev. and *C. ligatus* Murr.—were collected from the central spindles of young cane, Munum, Markham Valley. Their relationship to sugarcane is not known.

*Carpo$hilus* dimidiatus (F.) was bred from rotting cane collected at Kaiapit, Markham Valley, in August 1966.

Family **Rutelidae**

*Anomala anoguttata* Burm. Adults collected from cane, Popondetta, Northern District (new Territory record). Damage to foliage slight.

This species of *Anomala* has been previously recorded from the Philippines, where the larvae are presumably pests of sugarcane.

Family **Elateridae**

*Agrypnus* sp. Adults collected from the central spindle of young cane, Popondetta, Northern District. Its relationship to sugarcane is not known, but its behaviour resembles that of *Compsolacon gracilis*, so it may well be a predator.

Box1 lists three species of *Agrypnus* from sugarcane, one of which (*A. fuscipes* F.) is recorded as a predator on melolonthid larvae in Mauritius.

*Compsolacon gracilis* Cand. Adults of this species were commonly found in the central spindle of young cane at Bubia, Narakapor, Munum, and Kaiapit, Markham Valley. Its relationship to sugarcane is not known, but it may be a predator on other insects (e.g., *Eumetopina* sp., *Blattella* sp.) which occur in the same situation. This may well be the species which Buzacott* referred to as *Lacon* sp. nr. *gracilis* Cand.

Box1 lists only one species of *Compsolacon* (= *Lacon*) from sugarcane, viz. *C. formosanus* Bates, from Formosa.

Family **Curculionidae**

*Aphirolimus* sp., probably *A. cornutus* Pasc. This species was collected on Saccha-
*rum officinarum* in the Yonki area, Eastern Highlands District, in 1959\(^9\) (new record). It has a wide host range\(^9\).\(^{13}\).

*Hypolixus ritsemae* Pasc. Adults collected in numbers on young cane at Munum and Kaiapit, Markham Valley, and from Popondetta, Northern District (new record). Long (20–25 mm), narrow (1–2 mm in width) areas had been chewed in the leaves, but damage was generally slight.

*Oribius destructor* Mehl. Adults collected on *S. robustum* at Mt. Hagen, Western Highlands District, in 1964\(^9\) (new record).

*Rhabdoscelus obscursus* (Boisd.). This widely distributed, important sugarcane stem boring weevil\(^9\), was collected from maturing cane at Munum, Pyramid Hill and Kaiapit in the Markham Valley, but was not plentiful.

Family **Cerambycidae**

Subfamily **Lamiinae**

*Mulciber linnasi* Thoms. Adults of this species are very common in sugarcane stands around Popondetta and have recently moved in to the experimental sugarcane block at the Agricultural Training Institute, Popondetta.

Larvae of a relatively large species of Lamiinae, thought to be *M. linnasi*, have been commonly collected from sugarcane stems in the Popondetta area, but they have not yet been bred through.

*Pterophila* sp. Adult collected on cane, Popondetta. Its relationship to sugar cane is not known.

*Ropica* sp. Adults collected on cane stems, Kaiapit, Markham Valley. Larvae of a species of Lamiinae were quite common in young and maturing cane at Pyramid Hill and Kaiapit during 1966, either girdling the stem at the nodes or boring in the stem between the nodes, with the resultant death of the infested canes. Whilst the larvae were not bred out, the adults of this *Ropica* species were numerous enough in the stands of cane at both Kaiapit and Pyramid Hill to suggest that the larvae may have been this particular species.

**LEPIDOPTERA**

Family **Noctuidae**

*Sesamia grisescens* Walk. This was the most damaging insect pest encountered during the Markham Valley surveys, attacking canes of all ages, including maturing canes. Damage at Pyramid Hill and Kaiapit was particularly severe. Other localities in which *S. grisescens* larvae have been found in *Saccharum officinarum* include Popondetta, Northern District, and Bainyik Agricultural Station, Maprik, East Sepik District (Coll. F. J. Simmonds).

It will be recalled that Szent-Ivany and Ardley\(^9\) considered *S. grisescens* to be the Territory’s most important sugarcane pest.

Family **Pyralidae**

*Chilo terenellus* Pag. (= *Chliotroca terenellus* Pag., as quoted by Szent-Ivany and Ardley\(^9\)). Szent-Ivany\(^9\) records the following new localities for this species:

Koabu village, Fly River, Western District—reared from larvae in stem of *S. officinarum*, 1958.

Family Elachistidae

*Gen. et. sp. indet.* The larvae of this elachistid, which mine in the leaves, were collected from Bubia, Narakapor, Munum, and Pyramid Hill in the Markham Valley (new record). Damage to young cane can be particularly severe.

The elachistid *Dicranoctetes (= Donacivola = Elachista) saccharella* Busck., is recorded from sugarcane from Cuba.

Family Nymphalidae

*Melanitis leda bankia* Fabr. Larvae were collected on sugarcane foliage at Bubia, Markham Valley and at Popondetta and Sangara in the Northern District. It is of minor importance only.

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